

## **APPENDIX I**

### **GENERATING STATION CONSTRUCTION ACTIVITY AMBIENT AIR QUALITY IMPACT ANALYSIS**

- **Emission Parameters**
- **Significant Change In Air Quality**
- **Ambient NO<sub>2</sub> Analysis**
- **Ambient CO Analysis**
- **Ambient PM<sub>10</sub> Analysis**
- **Ambient PM<sub>2.5</sub> Analysis**
- **Ambient SO<sub>2</sub>/Sulfate Analysis**
- **Summary of Air Quality Analysis**

**Air Quality Impact Analysis - Emission Parameters**  
**Construction Emissions**  
**Riverside ERC**

**Equipment Information:**

Equipment Type: Construction Operations	Capacity: -	Fuel: Diesel
Manufacturer:	Output (MW): na	HHV:
Model:	# of Units: 1	

**Emission Rates:**

Pollutant	Per Unit Emission Rate (lbs/hr)	Total Emission Rate (lbs/hr)	Total Emission Rate (g/s)		Comments
NO <sub>x</sub>	7.54	7.54	0.95	1-Hour	
NO <sub>x</sub>	7.54	7.54	0.95	Annual	
CO	3.81	3.81	0.48	1-Hour	
CO	3.81	3.81	0.48	8-Hour	
PM <sub>10</sub>	2.15	2.15	0.27	24-Hour	ISCST3 not run @ 1 g/sec.
PM <sub>10</sub>	2.15	2.15	0.27	Annual	ISCST3 not run @ 1 g/sec.
PM <sub>2.5</sub>		0.00	0.00	24-Hour	
PM <sub>2.5</sub>		0.00	0.00	Annual	
SO <sub>x</sub>	0.01	0.01	0.00	1 hour / 3-Hour	
SO <sub>x</sub>	0.01	0.01	0.00	24-Hour	

**Air Quality Impact Analysis - Significant Change In Air Quality  
Construction Emissions  
Riverside ERC**

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**Air Quality Impact Analysis:**

Pollutant	Averaging Time	Emission Rate (g/sec)	Maximum Impact (ug/m³)	SCAQMD Significant Change	
				In Air Quality Threshold (ug/m³)	
NO <sub>2</sub>	1 - Hour	0.95	<b>1019.81</b>	<b>20.0</b>	
NO <sub>2</sub>	Annual*	0.95	<b>16.70</b>	<b>1.0</b>	
CO	1 - Hour	0.48	<b>513.28</b>	<b>1100.0</b>	
CO	8 - Hour	0.48	<b>128.97</b>	<b>500.0</b>	
PM	24 - Hour	0.27	<b>16.9720</b>	<b>2.5</b>	ISC not run @ 1 g/sec
PM <sub>10</sub>	Annual*	0.27	<b>0.9658</b>	<b>1.0</b>	ISC not run @ 1 g/sec
PM <sub>2.5</sub>	24 - Hour	0.00	<b>N/A</b>	<b>N/A</b>	
PM <sub>2.5</sub>	Annual	0.00	<b>N/A</b>	<b>N/A</b>	
Sulfate	24-Hour	0.00	<b>0.1115</b>	<b>N/A</b>	
SO <sub>2</sub>	1 - Hour	0.00	<b>1.1013</b>	<b>N/A</b>	
SO <sub>2</sub>	24-Hour	0.00	<b>0.1115</b>	<b>N/A</b>	

**Note:**

- X/Q Max values (ug/m³/g/sec) are taken from the ISC 3 model.

\*Annual dispersion model results for PM10 are scaled to reflect lower average hourly emissions over the duration of the project.

Maximum Annual Impact = ISC3 annual result x total project emissions / (total daily emissions x 154 days)

Annual PM10 impact = 2.33196 x (1097 lb/project / (17.2 max lb/day x 154 days)) = 0.9658

**Air Quality Impact Analysis - Summary of Ambient Air Quality Analysis**  
**Construction Emissions**  
**Riverside ERC**

**Ambient Air Quality Analysis:**

Pollutant	Averaging Time	Project Impacts	Ambient Background	Year of Maximum Background	Total Impacts (Project + Ambient)	Ambient Standard
NO <sub>x</sub>	1 - Hour (ppm)	0.062	0.15	2001, Rubidoux	0.212	0.25
NO <sub>x</sub>	Annual (ppm)	0.00525	0.03	1999, Rubidoux	0.03	0.0534
CO	1 - Hour (ppm)	0.449	11.0	1997, Riverside Magnolia	11.4	20.0
CO	8 - Hour (ppm)	0.113	5.8	1997, Rubidoux	5.9	9.0
PM	24 - Hour ( $\mu\text{g}/\text{m}^3$ )	16.97	164.0	2003, Rubidoux	181.0	50.0
PM <sub>10</sub>	Annual ( $\mu\text{g}/\text{m}^3$ )	0.97	72.30	1999, Rubidoux	73.27	20.0
PM <sub>2.5</sub>	24 - Hour ( $\mu\text{g}/\text{m}^3$ )	N/A	119.6	2000, Rubidoux	N/A	65.0
PM <sub>2.5</sub>	Annual ( $\mu\text{g}/\text{m}^3$ )	N/A	31.10	2001, Rubidoux	N/A	12.0
Sulfate	24 - Hour ( $\mu\text{g}/\text{m}^3$ )	0.11	11.700	2002, Rubidoux	11.81	25.00
SO <sub>2</sub>	1-hour (ppm)	0.00042	0.110	2000, Rubidoux	0.11	0.25
SO <sub>2</sub>	24-hour (ppm)	0.00004	0.041	2000, Rubidoux	0.041	0.040

**Air Quality Impact Analysis - Ambient NO<sub>2</sub> Analysis**  
**Construction Emissions**  
**Riverside ERC**

**1-Hour NO<sub>2</sub> Analysis:**

1. Convert NO<sub>2</sub> 1-hour project modeling impact results to ppm for ambient analysis (ambient standards are in ppm).

ppm NO<sub>2</sub> = ( $\mu\text{g}/\text{m}^3$ ) (0.0245/NO<sub>2</sub> MW)

Where:

NO<sub>2</sub> 1-Hour  $\mu\text{g}/\text{m}^3$ :

1019.8

OLM Ratio

0.114

NO<sub>2</sub> MW:

46.0

(Valid only for construction impacts)

Conversion:

0.0245

(based upon 200 meter distance to MEI)

So:

ppm NO<sub>2</sub>=

0.0619

(per SCAQMD)

2. Add NO<sub>2</sub> 1-hour background ambient data to projects modeling impacts.

ppm NO<sub>2</sub> = (projects modeling impacts + background ambient data)

Where:

Projects modeling impacts (ppm): 0.062

Ambient background data (ppm): 0.15

Station 4144 - Rubidoux - Year 2001

So:

Project + Background (ppm): 0.21

Most Stringent NO<sub>2</sub> 1-Hour Standard (ppm): 0.25

**Annual NO<sub>2</sub> Analysis:**

1. Convert annual project modeling impact results to ppm for ambient analysis (ambient standards are in ppm).

ppm NO<sub>2</sub> = ( $\mu\text{g}/\text{m}^3$ ) (0.0245/NO<sub>2</sub> MW)

Where:

NO<sub>2</sub> 1-Annual  $\mu\text{g}/\text{m}^3$ :

16.70

OLM Ratio

0.59

NO<sub>2</sub> MW:

46.0

(per SCAQMD)

Conversion:

0.0245

So:

ppm NO<sub>2</sub> =

0.00525

2. Add NO<sub>2</sub> annual background ambient data to projects modeling impacts.

ppm NO<sub>2</sub> = (projects modeling impacts + background ambient data)

Where:

Projects modeling impacts (ppm): 0.00525

Ambient background data (ppm): 0.0262

Station 4144 - Rubidoux - Year 1999

So:

Project + Background (ppm): 0.0314

Most Stringent NO<sub>2</sub> Annual Standard (ppm): 0.0534

**Air Quality Impact Analysis - Ambient CO Analysis  
Construction Emissions  
Riverside ERC**

**1-Hour CO Analysis:**

1. Convert CO 1-hour project modeling impact results to ppm for ambient analysis (ambient standards are in ppm).

$$\text{ppm CO} = (\mu\text{g/m}^3) (0.0245/\text{CO MW})$$

Where:

CO 1-Hour $\mu\text{g/m}^3$ :	513.3
CO MW:	28.0
Conversion:	0.0245

So:

$$\text{ppm CO} = 0.4491$$

2. Add CO 1-hour background ambient data to projects modeling impacts.

$$\text{ppm CO} = (\text{projects modeling impacts} + \text{background ambient data})$$

Where:

$$\begin{aligned}\text{Projects modeling impacts (ppm)} &: 0.449 \\ \text{Ambient background data (ppm)} &: 11.0\end{aligned}$$

Station 4146 - Riverside- Magnolia - 1997

So:

$$\begin{aligned}\text{Project + Background (ppm)} &: 11.45 \\ \text{Most Stringent CO 1-Hour Standard (ppm)} &: 20.0\end{aligned}$$

**8-Hour CO Analysis:**

1. Convert annual project modeling impact results to ppm for ambient analysis (ambient standards are in ppm).

$$\text{ppm CO} = (\mu\text{g/m}^3) (0.0245/\text{CO MW})$$

Where:

CO 8-Hour $\mu\text{g/m}^3$ :	129.0
CO MW:	28.0
Conversion:	0.0245

So:

$$\text{ppm CO} = 0.113$$

2. Add CO 8-Hour background ambient data to projects modeling impacts.

$$\text{ppm CO} = (\text{projects modeling impacts} + \text{background ambient data})$$

Where:

$$\begin{aligned}\text{Projects modeling impacts (ppm)} &: 0.113 \\ \text{Ambient background data (ppm)} &: 5.8\end{aligned}$$

Station 4144 - Rubidoux - 1997

So:

$$\begin{aligned}\text{Project + Background (ppm)} &: 5.91 \\ \text{Most Stringent CO 8-Hour Standard (ppm)} &: 9.0\end{aligned}$$

**Air Quality Impact Analysis - Ambient PM<sub>10</sub> Analysis  
Construction Emissions  
Riverside ERC**

**24-Hour PM<sub>10</sub> Analysis:**

1. Add PM<sub>10</sub> 24-Hour background ambient data to projects modeling impacts.

Where:

Projects modeling impacts ( $\mu\text{g}/\text{m}^3$ ): 16.972

Ambient background data ( $\mu\text{g}/\text{m}^3$ ): 164.0 Station 4144 - Rubidoux - 2003

So:

Project + Background ( $\mu\text{g}/\text{m}^3$ ): 181.0

Most Stringent PM<sub>10</sub> 24-Hour Standard ( $\mu\text{g}/\text{m}^3$ ): 50.0

**Annual PM<sub>10</sub> Analysis:**

1. Add PM<sub>10</sub> Annual background ambient data to projects modeling impacts.

Where:

Projects modeling impacts ( $\mu\text{g}/\text{m}^3$ ): 0.966

Ambient background data ( $\mu\text{g}/\text{m}^3$ ): 72.3 Station 4144 - Rubidoux - 1999

So:

Project + Background ( $\mu\text{g}/\text{m}^3$ ): 73.27

Most Stringent PM<sub>10</sub> Annual Standard ( $\mu\text{g}/\text{m}^3$ ): 30.0

**Air Quality Impact Analysis - Ambient PM<sub>2.5</sub> Analysis**  
**Construction Emissions**  
**Riverside ERC**

**24-Hour PM<sub>2.5</sub> Analysis:**

1. Add PM<sub>2.5</sub> 24-Hour background ambient data to projects modeling impacts.

Where:

Projects modeling impacts ( $\mu\text{g}/\text{m}^3$ ): N/A

Ambient background data ( $\mu\text{g}/\text{m}^3$ ): 119.6      Station 4144 - Rubidoux - Year 2000

So:

Project + Background ( $\mu\text{g}/\text{m}^3$ ): #VALUE!

Most Stringent PM<sub>2.5</sub> 24-Hour Standard ( $\mu\text{g}/\text{m}^3$ ): 50.0

**Annual PM<sub>2.5</sub> Analysis:**

1. Add PM<sub>2.5</sub> Annual background ambient data to projects modeling impacts.

Where:

Projects modeling impacts ( $\mu\text{g}/\text{m}^3$ ): N/A

Ambient background data ( $\mu\text{g}/\text{m}^3$ ): 31.1      Station 4144 - Rubidoux - Year 2001

So:

Project + Background ( $\mu\text{g}/\text{m}^3$ ): #VALUE!

Most Stringent PM<sub>2.5</sub> Annual Standard ( $\mu\text{g}/\text{m}^3$ ): 30.0

**Air Quality Impact Analysis - Ambient SO<sub>2</sub> / Sulfate  
Construction Emissions  
Riverside ERC**

**24-Hour Particulate Sulfate Analysis:**

1. Add SOx 24-Hour background ambient data to projects modeling impacts.

Where:

Projects modeling impacts ( $\mu\text{g}/\text{m}^3$ ): 0.11  
Ambient background data ( $\mu\text{g}/\text{m}^3$ ): 11.7      Station 4144 - Rubidoux - Year 2002

So:

Project + Background ( $\mu\text{g}/\text{m}^3$ ): 11.81  
Most Stringent SO<sub>2</sub> 24-Hour Standard ( $\mu\text{g}/\text{m}^3$ ): 25.0

**1-Hour SO<sub>2</sub> Analysis:**

1. Convert SO<sub>2</sub> 1-hour project modeling impact results to ppm for ambient analysis (ambient standards are in ppm).

$$\text{ppm SO}_2 = (\mu\text{g}/\text{m}^3) (0.0245/\text{SO}_2 \text{ MW})$$

Where:

SO<sub>2</sub> 1-Hour  $\mu\text{g}/\text{m}^3$ :      1.101  
SO<sub>2</sub> MW:                  64.0  
Conversion:                0.0245

So:

ppm SO<sub>2</sub>=                0.000422

2. Add SOx 1-Hour background ambient data to projects modeling impacts.

Where:

Projects modeling impacts (ppm): 0.000422  
Ambient background data (ppm): 0.11      Station 4144 - Rubidoux - Year 2000

So:

Project + Background (ppm): 0.11  
Most Stringent SO<sub>2</sub> 24-Hour Standard (ppm): 0.25

**24-Hour SO<sub>2</sub> Analysis:**

1. Convert SO<sub>2</sub> 24-hour project modeling impact results to ppm for ambient analysis (ambient standards are in ppm).

$$\text{ppm SO}_2 = (\mu\text{g}/\text{m}^3) (0.0245/\text{SO}_2 \text{ MW})$$

Where:

SO<sub>2</sub> 24-Hour  $\mu\text{g}/\text{m}^3$ :      0.112  
SO<sub>2</sub> MW:                  64.0  
Conversion:                0.0245

So:

ppm SO<sub>2</sub>=                0.000043

1. Add SOx 24-Hour background ambient data to projects modeling impacts.

Where:

Projects modeling impacts (ppm): 0.00004  
Ambient background data (ppm): 0.041      Station 4144 - Rubidoux - Year 2000

So:

Project + Background (ppm): 0.041  
Most Stringent SO<sub>2</sub> 24-Hour Standard (ppm): 0.040